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1. Abstract for submission to:

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2. Title:

Characterization of x-ray streak cameras for use on Nova

3. Author listing:

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4. Presentation:

Prefer poster presentation

5. Abstract text:

A suite of four re-entrant x-ray streak cameras (SSCs) are used for ICF target experiments on the Nova laser. They are inserted into six inch diagnostic tubes for each shot, and they are used to record streaked spatial information in one dimension, such as the spectral output from a crystal spectrometer or a one-dimensional lineout form a pinhole image. In order for us to properly analyze the data from x-ray streak cameras, it is important that we have a quantitative understanding of the dynamic response and calibration of the streak camera so that we record so that we can properly unfold the data.

We have performed a number of calibrations both on the bench as well as with Nova disk calibration to characterize the SSCs. We have developed a series of tests that allow us to obtain much of the calibration information with a single Nova target shot. We have measured the streak camera sweep rates, curvature of the electron optics, resolution as a function of space and time in the sweep window, and effects due to magnetic fields in the Nova target chamber. In this paper we describe these measurements on the four SSCs.

We will use the characterization measurements to make a direct comparison of a microchannel plate based x-ray streak camera vs. one with an image intensifier. We will also show results from experiments that rely on the details of the streak characterization to illustrate the importance of the calibrations.

6. Key words:

x-ray streak camera, inertial confinement fusion

7. Brief biography:

Daniel H. Kalantar is a physicist in the hydrodynamic experiments research group of the ICF program at LLNL. He is responsible for the x-ray streak cameras used at Nova as well as for diagnostic timing issues for target experiments. Daniel conducts direct drive and x-ray drive hydrodynamics experiments at the Nova laser as well as at other large laser facilities.

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